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SAFELY DELIVERING THE DEPARTMENT OF ENERGY'S VISION
FOR THE EAST TENNESSEE TECHNOLOGY PARK MISSION

UCOR-4088/R1

Environmental Compliance and Protection Awareness Handbook Oak Ridge, Tennessee

This document is approved for public
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Jessica D. Faucher

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UCOR-4088/R1

**Environmental Compliance and Protection Awareness Handbook
Oak Ridge, Tennessee**

Date Issued—June 2017

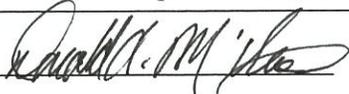
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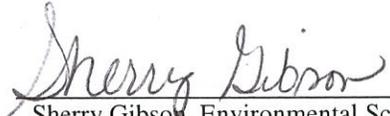
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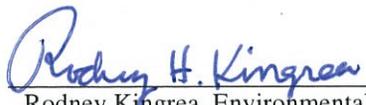
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APPROVALS

Environmental Compliance and Protection Awareness Handbook, Oak Ridge, Tennessee	UCOR-4088/R1
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REVISION LOG

Revision Number	Description of Changes	Pages Affected
1	Full document update. Updated the list of Records of Decision, included information on climate change, updated the water sections (groundwater, sanitary water, storm water, etc.), added a section on TRU waste, and included the Safety Conscious Work Environment, safety culture statements, and emergency signals information.	All
0	Initial issue of document.	All

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UCOR-4088/R1



Environmental Compliance & Protection

AWARENESS HANDBOOK



*Safely Delivering the
Department of Energy's Vision for the
East Tennessee Technology Park Mission*

SAFETY CONSCIOUS WORK ENVIRONMENT

URS | CH2M Oak Ridge LLC (UCOR) is committed to foster and maintain a safe work environment. Additionally, UCOR and the U.S. Department of Energy Oak Ridge Office of Environmental Management (OREM) are committed to maintain a safety-conscious work environment in all facilities and for all work. This is based on the following principles:

- *Safety is a prerequisite for all work. Our expectation is that each employee goes home in the same condition that he or she came to work. Our goal is zero injuries.*
- *All employees are encouraged and expected to promptly report all injuries, illnesses, and environmental incidents.*
- *All employees are encouraged and expected to have a questioning attitude and stop work if they feel a job cannot be done safely or the environment is threatened.*
- *All members of the OREM and UCOR leadership team, up to and including the OREM Manager and the UCOR President and Project Manager, have an open door policy, especially pertaining to safety.*
- *Employees have, and are encouraged and expected to use, multiple venues to express safety concerns. These include but are not limited to their management chain and Employee Concerns.*
- *Employee involvement is the cornerstone of our safety culture and is essential to the successful implementation of the Integrated Safety Management System (ISMS), Nuclear Safety, the Voluntary Protection Program, Behaviour Based Safety, and other Environment, Safety, Health and Quality Assurance program elements.*

Employees are encouraged to raise safety issues and concerns without fear of reprisal. The OREM/UCOR leadership team will address and resolve issues and concerns in a timely manner.

URS | CH2M Oak Ridge LLC

***Environmental Compliance &
Protection***

Awareness Handbook

June 2017



OUR SAFETY CULTURE

Safety is a prerequisite for all work being performed by UCOR and our subcontractors. We are committed to ensuring the safety of our employees and protection of the environment as we work to clean up the Oak Ridge Reservation. Our Integrated Safety Management System brings together environment, safety, and health into management and work practices at all levels. Employee involvement is a critical component of this system. We empower employees to stop work whenever they feel something is unsafe or are unsure. We embrace a questioning attitude amongst our UCOR team members and encourage feedback and participation at all levels of the company. As we look toward the many upcoming tasks and challenges, safety will always be the foundation upon which we build our success – Every task, Every Activity, Every Time.

Ken Rueter, President and Project Manager
URS | CH2M Oak Ridge LLC (UCOR)



Constructive feedback that will improve our Environmental Compliance and Protection (EC&P) Program is always welcome. If you have a suggestion, discuss it with your supervisor or your project Environmental, Safety and Health (ESH) Operations Manager or EC&P Lead.



Note: The information contained in this handbook provides brief summaries of environmental resources, impacts, and controls. It is not meant to serve as, or replace, UCOR's or your company's EC&P Program. Contact your project EC&P Lead and/or your project ESH Operations Manager if you have questions or need further assistance.

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PURPOSE

The purpose of this handbook is to provide UCOR employees and subcontractors working on the Oak Ridge Reservation (ORR) with an overview of environmental and regulatory requirements applicable to site-specific environmental restoration activities. Brief summaries of hazards to the environment that can be expected on the job site and common physical controls for protecting the environment's natural resources are also provided. This handbook is not intended to be a comprehensive reference or to replace UCOR's or your company's Environmental Compliance and Protection (EC&P) Program. Please contact your UCOR project EC&P Lead or your company's Environmental, Safety and Health (ESH) staff for assistance with environmental and regulatory issues or questions.

OAK RIDGE RESERVATION SITE OVERVIEW

The ORR encompasses 33,746 acres located within and adjacent to the corporate limits of the City of Oak Ridge, Tennessee, in Anderson and Roane counties in East Tennessee. The ORR is bordered by developed portions of the City of Oak Ridge to the north and east, and the Clinch River to the south and west. Land use in the surrounding areas include residential, commercial, and agricultural properties. Other than the City of Oak Ridge, property immediately adjacent to the ORR is primarily rural and undeveloped. Much of the ORR is also part of the Oak Ridge Wildlife Management Area.

The three primary U.S. Department of Energy (DOE) installations located within the ORR are East Tennessee Technology Park (ETTP), Oak Ridge National Laboratory (ORNL), and the Y-12 National Security Complex (Y-12). Operations at these facilities dating from the Manhattan Project in 1942 have resulted in contamination of the environment. As a result, the U.S. Environmental Protection Agency (EPA) placed the entire ORR on the National Priorities List (NPL) in 1989. These three facilities have different missions and expected end uses. ETTP has no continuing DOE mission and is being remediated to allow for its use as a commercial industrial park and a National Park Service Manhattan Project museum without a significant DOE presence. ORNL will continue to be operated by the DOE Office of Science as a multidisciplinary research and development center. Y-12 will continue operation under the National Nuclear Security Administration (NNSA) to provide national defense operations.



The DOE Environmental Management Program is responsible for environmental restoration of contaminated sites within the ORR and its three installations. UCOR assumed responsibility as the environmental cleanup and remediation contractor for DOE on August 1, 2011.

ENVIRONMENTAL LAWS IMPACTING THE ORR AND ITS FACILITIES

Driving the Environmental Remediation Program at the ORR and its facilities are several state and federal laws and regulations, as well as DOE directives and orders. The requirements generated from these laws, regulations, and directives are extensive and sometimes overlapping.

Restoration began in 1992, when DOE signed the first cleanup agreements with the EPA and the Tennessee Department of Environment and Conservation (TDEC). DOE was legally bound to investigate the ORR and take corrective actions to clean up contamination and ensure the safe handling of waste. TDEC, its Division of DOE Oversight, and EPA Region 4, headquartered in Atlanta, Georgia, oversee cleanup at the ORR.



Cleanup work is based on agreements being performed in compliance with various regulations established to control hazardous, radioactive, and mixed wastes—from the time they are generated until their final disposal—in a manner that is protective of public health and the environment.

Resource Conservation and Recovery Act (RCRA)

This act regulates the generation, accumulation, storage, transportation, and disposal of hazardous waste. Waste is designated as hazardous by the EPA because of various chemical properties, including ignitability, corrosivity, reactivity, and toxicity. Certain waste must be rendered nonhazardous or treated to meet specific treatment standards before it can be permanently disposed in a landfill.

Toxic Substances Control Act (TSCA)

This act regulates the use, storage, and disposal of polychlorinated biphenyls (PCBs). The electrical power systems at many ORR facilities that are in the process of

being dismantled used oil-based circuit breaker transformers and large high-voltage capacitors, both containing PCB oil, to supply electricity for past enrichment process activities. PCBs were also used in paints, and PCB-contaminated paint has been identified on numerous structures at the ORR.

In addition to TSCA and its enabling regulations, ORR facilities operate in compliance with the *Oak Ridge Reservation Polychlorinated Biphenyl Federal Facilities Compliance Agreement (ORR-PCB-FFCA)* between EPA Region 4 and DOE Oak Ridge Operations. The agreement became effective on December 16, 1996.

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)

ORR is included on the CERCLA NPL of sites requiring cleanup. Under the provisions of CERCLA and its decision documents [e.g., Records of Decision (RODs)], DOE is obligated to comply with those federal, state, and local requirements that are deemed *applicable or relevant and appropriate requirements (ARARs)*. Although many administrative requirements (e.g., written records, permits) are waived under CERCLA, all substantive requirements (e.g., engineering controls) that provide protection of the environment or that meet permitting standards still apply and must be complied with to meet the intent of the enabling federal laws that are the basis for the regulations.

Section 103 of CERCLA requires notification to the *National Response Center* if hazardous substances are released to the environment in amounts greater than or equal to the *reportable quantity (RQ)* listed for each hazardous substance. RQs are listed in the act and EPA regulations and vary depending on the type of hazardous substance and volume released.



Federal Facility Compliance Act

All three facilities at the ORR currently manage a mixture of RCRA hazardous waste, low-level radioactive

waste, and mixed waste consisting of RCRA waste and radioactivity. RCRA hazardous waste is subject to *Land Disposal Restrictions (LDRs)* in the federal regulations that do not allow the storage of hazardous waste for longer than one year if there is an EPA-approved technology to treat the waste. The Federal Facility Compliance Act, enacted by Congress in October 1992, allows for the storage of mixed hazardous/low-level radioactive waste for longer than one year if treatment is not readily available for these types of waste.

National Environmental Policy Act (NEPA)

This act requires that all federal agencies anticipate and consider environmental consequences prior to undertaking major actions. DOE is required to evaluate and prepare a statement on the environmental impact of every proposal for federal action "significantly affecting the quality of the human environment."

NEPA created an environmental impact review process that includes public review and participation. This process includes an *Environmental Assessment* to determine whether a proposed action would have significant impact to the environment and an *Environmental Impact Statement*, which summarizes all impacts to the environment and their consequences. *NEPA Values* are also addressed in all CERCLA evaluations conducted for remedial activities on the ORR.

National Historic Preservation Act Archaeological Resources Protection Act

The intent of these acts is to preserve the historical and cultural foundations of the nation as a living part of our community life and development in order to give a sense of orientation to the American people. DOE is required to prepare and implement a Cultural Resources Management Plan that documents and protects historical, cultural, and archaeological resources (including artifacts, human remains, etc.) for future generations.

***Superfund Amendments and Reauthorization Act
(SARA Title III)***

This law also includes provisions of the Emergency Planning and Community Right-to-Know Act. Its two-fold purpose is to develop plans to respond quickly in the event of an accident, spill, or release of hazardous substances, and to increase the public's knowledge and access to information on the presence of hazardous chemicals in their communities, and releases of these chemicals into the environment.

Clean Water Act

This act forms the basis for efforts to control pollution of our nation's surface waters. The law's goal is to make all surface waters safe for fishing and swimming.



Clean Air Act

The Clean Air Act of 1970 and 1977 and the Act's 1990 amendments gave the federal government power to control air pollution. Clean air laws require EPA to establish national ambient air quality standards for major outdoor pollutants—particulates, sulfur oxides, carbon monoxide, nitrogen oxides, ozone, and lead. Each standard specifies the maximum allowable level, averaged over a specific time period, for a certain pollutant in outdoor air. EPA has designated a list of hazardous air pollutants and established national emission standards for hazardous air pollutants to control radionuclide and radon emissions from DOE facilities.

Federal Insecticide, Fungicide, and Rodenticide Act

This act controls any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, use as a plant regulator, defoliant, or desiccant, or use as a nitrogen stabilizer. Personnel at all three facilities on the ORR may apply general use pesticides according to product labeling, and all product warnings and cautions must be strictly obeyed. When

application of a restricted-use pesticide is required, a certified contractor must be employed before the pesticide is applied.

DOE Order 436.1, Departmental Sustainability

Created by DOE in 2003, DOE Order 450.1, *Environmental Protection Program*, required that each DOE facility implement a program to protect the environment through a formal work process based upon an *Environmental Management System* (EMS). The primary elements of the EMS—a written environmental policy, subject matter expertise, approved and documented procedures, and a corrective action program that addresses EC&P of natural resources—must be integrated with and implemented through DOE's Integrated Safety Management System (ISMS). During 2011, DOE Order 450.1 was replaced by DOE Order 436.1, *Departmental Sustainability*, which contains similar requirements related to implementation of an EMS.

REGULATORY AGREEMENTS

Federal Facility Agreement

EPA proposed the ORR for listing on the NPL in July 1989, with the final listing effective in December 1989. As a result of this, DOE, EPA Region 4, and TDEC signed a Federal Facility Agreement (FFA) (DOE/OR-1014) for the restoration of the ORR, effective in January 1992. The FFA has been amended several times since then by agreement of the signing parties.

The FFA defines various federal environmental laws that apply to remedial efforts. It also establishes a procedural framework and schedule for developing, implementing, and monitoring response actions at the ORR in accordance with CERCLA, RCRA, NEPA, and Tennessee laws. The FFA requires that a list of ARARs be prepared as required by CERCLA. ARARs are normally written into the CERCLA decision documents. The FFA coordinates between CERCLA and RCRA, stating that corrective actions previously established under DOE's current Hazardous and Solid Waste Amendments of 1984 Corrective Actions Document will be supplemented with *response actions* under CERCLA to ensure comprehensive remediation at the ORR. Existing RCRA-permitted facilities will be modified to incorporate a CERCLA *remedial response* selected as a corrective measure to satisfy RCRA. Specifically, the FFA extends to preparation of key decision documents under CERCLA and RCRA, called RODs.



CERCLA Records of Decision

The following list contains some of the RODs that have been approved and issued to direct cleanup work on the ORR. Additional RODs will be written and approved as new cleanup actions are planned, scheduled, and implemented on the ORR.

- K-1407 BC Ponds (1993)

- Upper East Fork Poplar Creek Operable Unit 2 (1994)
- Oak Ridge Associated Universities South Campus Facility, Kerr Hollow Quarry, Lower East Fork Poplar Creek and Lower Watts Bar Reservoir (1995)
- Chestnut Ridge Operable Unit 2 (1996)
- Removal of sludge from tanks at ORNL, remediation of Surface Impoundments at ORNL, remediation of Clinch River/Poplar Creek, Bear Creek Operable Unit 2, and remediation of Union Valley groundwater plumes (1997)
- Molten Salt Reactor Experiment fuel and flush salts, K-1070-C/D Operable Units (1998)
- K-1070-A Burial Ground and Bear Creek Valley (2000)
- Melton Valley Watershed and Bear Creek Valley Watershed (2000 and 2004)
- Bethel Valley Watershed and Upper East Fork Poplar Creek sediments (2002)
- ETP Zone 1 soil remediation (2002)
- Zone 2 Soil, Buried Waste, and Subsurface Structure removal (2005)
- Upper East Fork Poplar Creek Characterization Area (2006)

ENVIRONMENTAL MANAGEMENT SYSTEM

Environmental Policy Statement

UCOR is committed to incorporating sound environmental management, protection and sustainability practices in all its work processes and activities that are part of our DOE ETTP Contract. We are committed to continually improve the environmental performance of our operations. Our commitment to protect and sustain human, natural, and cultural resources is inherent in our mission to complete environmental cleanup safely with reduced risks to the public, workers, and the environment. This includes tracking greenhouse gas (GHG) emissions potentially associated with climate change.

UCOR implements an EMS as part of its existing ISMS established pursuant to DOE Policy 450.4A, *Integrated Safety Management Policy*. Using a graded approach appropriate for a closure and remediation contract, the EMS incorporates performance goals and provides a unified strategy for the management and protection of natural resources, the control and attenuation of risks, the prevention of pollution, the acquisition of sustainable products and services, and the establishment and attainment of all environmental, safety and health requirements. UCOR works continuously to improve our EMS and environmental performance and to communicate and reinforce this policy to our internal and external stakeholders.

Taking into account environmental considerations during all phases of work is important. UCOR's ISMS provides all of us a framework for doing work safely when we apply the five *core functions* and seven *guiding principles*. *Environmental aspects*—a site's natural resources, how our work affects them, and how impacts on our environment can be controlled or eliminated—are all evaluated by applying an EMS *approach* to the ISMS process. Listed below are UCOR's environmental aspects associated with our work activities:

- Air emissions

- Storm water discharges
- Waste generation
- Releases to the facilities/land/soils/surface water
- Releases to or pumping of groundwater
- Pollution Prevention/Waste Minimization, including environmentally preferable purchasing
- Wastewater discharges
- Sanitary wastewater discharges
- Cultural/historic preservation
- Wildlife/habitat/endangered species
- Energy/fuel use
- Aquatic resource alteration
- Land use
- Water use
- Environmental noise

You help make the EMS *work* when you consider the environment during each phase of your job planning, scoping, and execution and discuss your ideas with your supervisor and your team as work proceeds and after the job is done.

Thinking EMS means asking the following questions:

1. ***Have we discussed the scope of work to be performed today?***
2. ***Have we considered the site's natural resources and their significance?***
3. ***Have we identified the hazards and potential impacts that may affect the site's environment as well as our own safety?***
4. ***Are we trained to apply the appropriate environmental requirements or permit conditions? Are we complying with the requirements that apply?***

5. ***What conditions could change today that might affect the site's environment?***
6. ***Do we know what to do or whom to contact if there is a spill, release, or other change?***
7. ***How can we ensure that what we do and how we do it will protect the site's environment?***

Climate Change

Global warming refers to the potential for rises in global average temperature near the Earth's surface. It can be caused by increasing concentrations of GHGs in the atmosphere, and this could cause climate patterns to change. Rising global temperatures can be accompanied by changes in weather and climate. For example, changes in rainfall, resulting in more floods, droughts, or intense rain, as well as more frequent and severe heat waves are potential impacts of climate change.

The choices we make today can affect the amount of greenhouse gases we put in the atmosphere in the near future and for years to come. UCOR implements sustainable practices in many different areas of its work to minimize possible GHG emissions.

UCOR has a robust pollution prevention program that includes diverting waste whenever possible, purchasing recycled content and biobased items where available, and reusing items at the project level wherever possible. All of these actions help conserve energy, reduce costs, and reduce potential impacts to our climate.

UCOR also saves energy and reduces GHG emissions by being good electronic stewards. Practices such as purchasing 100% Electronic Product Environmental Assessment Tool computer equipment, implementing power management on 100% of its computer equipment, and using default double-sided printing on its imaging equipment are all examples of reducing energy and materials which may reduce its impact to climate change.

As employees, you can help by turning off office lights when not in use, recycling (bottles, aluminum cans, paper, cardboard, toner cartridges, etc.), carpooling to work, and looking for ways to reuse office and project materials to avoid the purchase of virgin materials, through which additional processing can contribute to GHG production and impact our climate.

REMEMBER—it's YOUR environment. Natural resources—the air, water, soil, wildlife habitat—that you help protect today will be here for you and others to enjoy tomorrow!



JOB-SPECIFIC ENVIRONMENTAL REQUIREMENTS

General

This section of the handbook provides general summary level information on various job-specific environmental requirements; however, it is not intended to be an all-inclusive list of environmental aspects and controls. More specific guidance and requirements can be found in the *UCOR Environmental Compliance and Protection Program Description (PPD-EC-1747)*. In addition, the project EC&P Lead and/or Project ESH Operations Manager should be consulted for specific guidance on job-specific environmental requirements as necessary.

AIR

Sources of Air Pollution That May Require Permits

Permits, physical controls, or evaluations are normally required or air emission limits may apply for the following:

- Fuel storage/transfer tanks
- Construction projects
- Excavation and penetration activities
- Scabbling and paint removal activities
- Paint spraybooths
- Solvent cleaning operations
- Carpenter shops
- Emergency diesel generators
- Glove boxes
- Maintenance of refrigeration equipment
- Landfill vents
- Groundwater treatment facilities
- Radioactive emission point sources (e.g., portable high-efficiency particulate air filters)



REMEMBER—Permits, controls, or evaluations may be required **BEFORE** construction or operations begin.

Control equipment must be maintained in good condition and operated as permitted.

These permits limit some or all of the following:

- Particulate and gaseous emissions (from stacks, ducts, and filters)
- Fugitive emissions (emissions from sources other than stacks or ducts, such as gasoline, chemical tanks or airborne dust and particulate matter)

- Opacity (pollutants from building vents or stacks and fugitive emissions)
- Volatile organic compounds (fuel storage tanks and chemical treatment tanks)

What can I do?

Apply water* for control of *airborne dust*, such as on gravel roads and open areas where earthmoving operations are in progress. Cover sources of dust where practical.

(*Potable tap water usually contains chlorine and should NOT be used for dust control. *Chlorine* in runoff water can kill fish and wildlife and may violate certain water permits!)

Do not conduct *open burning* unless you have checked with your site EC&P Lead and notified the Park Shift Superintendent (PSS)/Laboratory Shift Superintendent (LSS) at your site. In certain cases, notification to the City of Oak Ridge and TDEC are required prior to conducting open burning. Also, in certain county jurisdictions (e.g., Roane County), a *burn permit* is required before conducting an open burn. Never burn tires, rubber, batteries, plastics, or treated wood.

REMEMBER—Check to see if a permit is required before you build it, operate it, or change it!

STORM WATER

National Pollutant Discharge Elimination System (NPDES) permits are issued by TDEC and set limits for discharges of pollutants into waters of the state of Tennessee (e.g., surface water, groundwater, wetlands). These permits regulate discharges of storm water, treated wastewater, groundwater, etc., into waters of the state.

Storm Water Runoff

Storm water runoff is generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, and dirt/sediment that can harm our rivers, streams, lakes, and wetlands. Storm water runoff regulations and site runoff controls are designed to prevent pollutants from washing into surface water during precipitation events.

General plant areas, parking lots, and equipment are sources of storm water runoff contamination. Other potential sources of contamination of storm water include the following:

- Chemical or material transfer and storage including any associated leaks
- Improper discharge of accumulated water from ditches, trenches, excavations, etc.
- Vehicle and heavy equipment maintenance areas
- Leaking equipment in switchyards or transformer yards
- Fluid leaks from vehicles and equipment
- Overfilling of fuel tanks on personal or site vehicles, especially during hot weather
- Poor housekeeping
- Leaking storage tanks, drums, or containers
- Improper pesticide application

- Erosion from areas of exposed soil

Discharges of pollutants in storm water runoff can be controlled using best management practices (BMPs). BMPs are utilized to reduce pollutants and/or prevent pollution by controlling it at its source. BMPs have been prepared for many common activities that could contribute pollutants to surface water via storm water runoff. Check with your site EC&P staff for further assistance about what requirements apply to your site or work area and what BMPs are available that cover your work activities.

What can I do?

Do not discharge or dispose of anything in a storm water inlet under any circumstances! These inlets are connected to the main storm water drainage system, which ultimately discharges to waters of the state. In addition to creating a potential noncompliance with your site's NPDES storm water permit, illicit discharges to the storm drain system could cause major impact to the plants and animals that inhabit receiving waters.

Immediately report any leaks or spills you observe to your supervisor or directly to the PSS or LSS.

Inspect your personal vehicle and any vehicles you may operate onsite on a routine basis to ensure that they are not leaking fuel, oil, coolant, or other fluids.

DRINKING WATER

The installations on the ORR either have their own water treatment facilities that supply *drinking water* onsite or are supplied municipal water. ETPP and Y-12 receive drinking water from facilities operated by the City of Oak Ridge. UCOR does not operate any water potable treatment facilities on the ORR.

Drinking water must meet special permit limits set on chlorine, turbidity, metals, organic compounds, and bacterial content.



Whenever drinking water lines are extended or new lines are installed, the lines must be disinfected and the water tested to demonstrate that bacteria are not present before the lines can be placed into service. Backflow preventers are also required within ORR facilities to prevent contamination of drinking water by process water.

What can I do?

REPORT immediately any unusual water discharges from the ground or through cracks in sidewalks or roadways. Seeping water may indicate a ruptured water line!

DO NOT discharge drinking water to the environment or to the storm drain system. The chlorine used to kill bacteria in drinking water can kill aquatic organisms at very low concentrations.

SANITARY SEWER SYSTEMS

Sewage is waste matter or refuse liquid carried by water. It consists mostly of greywater (from sinks, showers, dishwashers, and clothes washers), blackwater (the water used to flush toilets, combined with the human waste that it flushes away); soaps and detergents; and toilet paper. Facilities on the ORR have their own sewage treatment plants operated by a DOE prime contractor or are provided sewage treatment services by the City of Oak Ridge.



Overflow is a discharge of a waste stream from a collection or treatment system other than through the permitted discharge point.

Examples of overflow: release due to leaking or ruptured pipe, release due to blockage of a pipe by an obstruction.

What can I do?

REPORT any seepage, leaks, or overflows of sanitary sewage piping systems and associated tanks to your supervisor or to the PSS, LSS, or the project's EC&P staff.

ASK before you repair, reroute, or perform maintenance work for any sewage-handling equipment, piping, and associated tanks.

DO NOT pour any chemical, used oil, or other hazardous liquid down any drain that could inhibit the bacterial action responsible for sewage treatment or have negative effects on the ORR sewage treatment systems. Dispose of chemicals properly. If you don't know what to do, ask your supervisor or project EC&P Lead.

DO NOT flush paper towels, sanitary products, or other materials that may create blockages in sanitary sewer system piping.

SEDIMENT/EROSION CONTROL

Disturbed areas (e.g., land areas subject to excavation, penetration) or construction activities that disturb greater than 1 acre may require a storm water permit and a *Storm Water Pollution Prevention Plan* before work can begin.

What can I do?

Work with your project EC&P Lead or your company's EC&P staff **BEFORE** beginning clearing, excavating, or construction activities to determine permit requirements and to apply for and obtain a permit if one is required.

Disturbed soil, if not managed properly, can be carried offsite during precipitation events. Unless proper erosion prevention and sediment controls are used for construction activities, transport of sediment to a local water body is possible. Excessive sedimentation causes adverse impacts due to biological alterations, reduced passage in rivers and streams, higher drinking water treatment costs for removing the sediment, and the alteration of water's physical and chemical properties, resulting in degradation of its quality.



The amount of sediment carried in storm water runoff can be minimized by using the following BMPs:

- Storm water can be diverted away from areas of soil disturbance to reduce contact. Example: using diversion ditch or dike up-gradient of a construction area.
- Construction projects can be planned in stages to minimize areas of soil exposed at any one time.
- Terraced or benched slopes and roughening or graded slopes will slow and reduce runoff.
- Disturbed areas should be re-vegetated as soon as possible after work has been completed.

- Vegetation can provide sediment control when used as a filter to collect sediment. Example: strips of grass along the contour of a graded slope or planted in the area preceding a storm drain.
- Silt fences, erosion eels, or sandbags can be used to trap sediment in areas of exposed soil. Silt fences, erosion eels, and sandbags must be installed so that water does not flow under or around them. They must also be checked routinely (particularly after heavy rains) and repaired or replaced, as necessary.
- Sediment basins or retention ponds may be used to collect runoff that has high levels of suspended solids or other pollutants, such as from a large construction project.

GROUNDWATER

Groundwater is widely used as a source of drinking water, so groundwater quality must be protected. Although groundwater beneath the ORR is not used as a drinking water supply, it does provide a source of recharge water to certain surface water environments like streams, lakes, and wetland areas.

Common sources of groundwater contamination include the following:

- Leachate from landfills
- Leaking underground storage tanks and leaking underground pipes/lines
- Improper use of pesticides
- Cleaning and degreasing operations
- Overfills or spills when filling tanks or refueling equipment
- Pipeline or equipment ruptures



What can I do?

- Properly dispose of all waste; do not dispose of chemicals down storm drains, floor drains, or on the ground.
- Safely use and store all chemicals and fuels.
- Minimize the use of chemicals; always use according to directions.
- Make sure waste dumpsters are closed.
- Do not overfill vehicle fuel tanks, especially in hot weather.

RELEASES TO THE ENVIRONMENT

Releases of liquids, solids, or gases to the air, water, and soil can have immediate and long-term effects on the environment as well as on our personal safety and the public health.

What can I do?

There are actions that you can take to help prevent spills, leaks, emissions, discharges, and other releases to the environment and control or minimize their damage when they occur.

Spill Prevention

Each plant site on the ORR has a *Spill Prevention, Control, and Countermeasure Plan* (SPCC) and *Contingency Plan* to prevent oil or hazardous substances from reaching surface waters and to respond to a spill.

READ—your plan so you are familiar with it.

Storage tanks (e.g., fuel oil, gasoline, acids, caustics, drums of chemicals) may create opportunities for spills.

Fuel truck transfer operations and oil storage containers (e.g., fuel oil, diesel, gasoline, hydraulic fluids) containing greater than 55 gallons must have *secondary containment*.



- SPCC-regulated aboveground storage tanks must meet specifically sized secondary containment requirements.
- Keep valves on secondary containment areas closed.
- Use oil absorbents for spills.
- Inspect tanks, pipes, and valves for leaks.

- Petroleum underground storage tanks (USTs) must meet regulatory requirements for USTs, which may include SPCC requirements.
- Maintain your spill kit by periodically checking the kit's inventory to see if it is stocked for use.

Be alert! Don't overfill a storage tank, gasoline can, container, or a vehicle or equipment fuel tank.

Spill Control

All facilities at the ORR should use documented and approved practices to prevent spills. If a spill of oil, hydraulic fluid, antifreeze, material, product, or hazardous or radioactive substances occurs, immediately NOTIFY your supervisor, the PSS (at ETPP or Y-12), the LSS (at ORNL), and your site or company EC&P staff. Under no circumstances shall the spilled material be intentionally washed into nearby drainage ditches, storm sewers, sanitary sewers, wetlands, or waterways.

NOTE: Your site or work area may have criteria that help determine the need to notify based on the size of the spill, the material involved, or whether the spill is easily contained and cleaned up. CHECK with your EC&P staff or company's environmental staff to be sure.

To control a SPILL:

- Identify the material spilled and the approximate quantity of the spill. Can the spill reach surface waters? A storm drain?
- If safe to do so, stop the source of the release and its spread, if possible.
- If safe to do so, contain the spill within a diked area, if possible. Block possible pathways for the spill to reach surface waters or to contaminate a larger area.
- If safe to do so, clean up the spill using absorbents or other appropriate response materials.

- Dispose of all cleanup residue (including wipes, pads, tools, etc.) properly.



Contact your Waste Generator Services program or your company's waste management staff for further information.

Soil contaminated from the spill may need to be removed or treated in accordance with regulations (the transport and/or treatment of contaminated soil may require permitting or regulatory approval).

To control a spill of HAZARDOUS OR RADIOACTIVE substances:

- The ETP, ORNL, and Y-12 Fire Departments have primary responsibility for the initial response to most hazardous and radioactive spills that the operating project or organization cannot control. Proper training is required prior to handling hazardous and radioactive material spills.

Spill Notification

Any spill greater than EPA's defined RQ that is released to the environment must be reported to the National Response Center in Washington, D.C., and the appropriate Tennessee and local authorities.

In Tennessee, any amount of oil that causes oil sheen on a water surface of a creek, stream, tributary, river, pond, or lake is also a reportable spill!

Some hazardous materials, such as asbestos or PCBs, must be reported if the amount spilled to the environment is as low as 1 pound. Your EC&P Lead should be contacted to determine if spills and releases are reportable.

Contact your supervisor and your site's PSS or LSS immediately to report a spill or release.

Follow UCOR's or your project site's Occurrence Reporting procedures (or DOE Occurrence Reporting and Processing System process) for reporting spills.

Spill Response

How should I personally handle spills, releases, and other emergencies involving an uncontrolled release of hazardous or radioactive materials?

Consider YOUR SAFETY and that of your team
FIRST!

Keeping distance between you and the spill provides a margin of safety.

Specialized response training is required for all workers and their supervisors that handle hazardous waste and radioactive materials. For certain liquids, solids, or gases, specialized training may also be required for response.

If you are not trained to respond to a given type of spill or release, immediately contact the PSS/LSS so that trained personnel can respond in a timely manner.

POLLUTION PREVENTION/ WASTE MINIMIZATION

There are many things each of us can do to prevent pollution and to minimize the amount of waste we create on the job site.

Recycling paper, aluminum cans, used oil, plastic, alkaline batteries and other disposable items (e.g., photocopier toner cartridges) can help to reduce waste that needs to be landfilled and helps to stop pollution of the environment.



WATCH for special containers at your job site that are used to collect various recyclable materials. Recycle when you can!

ASK your office administrator about how you can recycle paper or other office supplies (e.g., photocopier machine toner cartridges).

When procuring goods under government contract, **BUY** building materials, office supplies, and other goods that are made from recycled or biobased material. For example, office paper should be manufactured from recycled paper. Examples of biobased materials include products made from renewable natural resources such as products made from agricultural products (e.g., citric-based cleaning products). Contact the UCOR Pollution Prevention Coordinator for assistance in identifying environmentally preferable products and materials.

DISCUSS your ideas for preventing pollution and minimizing all types of waste with your supervisor and work team.

WASTE TYPES AND THEIR MANAGEMENT

General

Many types of waste are generated during execution of UCOR work scope and it is very important that the type of waste generated and the associated waste storage and handling requirements be identified prior to generating the waste. This section contains summary level information on the various types of waste and the associated handling requirements. Additional information can be found in UCOR's *Environmental Compliance and Protection Program Description* (PPD-EC-1747). In addition, the project EC&P Lead and Waste Generator Services Lead should be contacted to determine proper waste handling requirements when necessary.

Sanitary Waste

Sanitary or solid waste is commonly considered household trash, garbage, or clean, uncontaminated industrial waste. Such waste generated at the job site must be properly disposed.

The following uncontaminated construction and industrial waste is also considered sanitary or solid waste:

- Bricks
- Concrete
- Masonry
- Fiberglass
- Glass
- Rubber
- Plastic
- Non-asbestos insulation
- Empty crushed paint cans
- Used paint brushes
- Soil



- Rocks
- Paving materials
- Scrap metal
- Duct work
- Piping
- Filters
- Treated wood
- Rubbish—similar to household waste; non-oil rags, non-recyclable paper

To help prevent pollution and minimize waste, collect the following types of solid waste separately for *recycling or reuse* (in designated, properly labeled containers):

- Office paper
- Cardboard packaging
- Aluminum cans
- Used oil
- Light bulbs (e.g., fluorescent, sodium, halogen)
- Plastic bottles
- Batteries



Check with the UCOR Waste Generator Services Program or your project's or company's waste management staff if you have any questions about proper management, transportation, and disposal of sanitary or solid waste.

Hazardous Waste and Special Waste

A *hazardous waste* is a material that is ready for disposal and that has the potential to be a significant threat to public health or the environment.

The handling, storage, treatment, and disposal of hazardous waste on the ORR are regulated by TDEC and the EPA. Radioactive waste is regulated by DOE. Mixed waste is regulated by DOE, TDEC, and the EPA.

Special waste (such as oily rags, used oil absorbent materials, materials containing PCBs or asbestos, paint rags, waste oil, waste grease, sandblasting grit, and industrial filters) and hazardous waste have specific disposal requirements.

Radioactive waste is radioactive material with little potential for recycle and is destined for disposal. *Mixed waste* is radioactively contaminated hazardous waste.

Hazardous Materials

A *hazardous material* is any material (e.g., liquid, solid, or gas) that is capable of producing adverse effects to human health, to the safety of those using it, and to the environment where it is used. The use of hazardous materials in the workplace is regulated by the Occupational Safety and Health Administration (OSHA). The transport of hazardous materials and hazardous waste, mixed waste, and radioactive waste is regulated by the U.S. Department of Transportation (DOT).

Hazard Communication

Hazardous material is a necessary part of most ORR operations, but it can be handled to minimize risk to health, safety, and the environment.

KNOW what is on the warning label and the Safety Data Sheet (SDS).

The label on each container will provide valuable information on potential hazards, how to handle safely, and how to store properly.

- A label provides information on a container's contents.
- An SDS is provided by the manufacturer for every chemical used.

- The SDS contains information on any hazards and any special handling requirements.
- The SDS must be available to you for your review at the work site.

You have a legal right to know about any hazards involved with chemicals used on the job.

The *Hazard Communication Standard* requires employee training on hazardous materials in the workplace, including how to read an SDS.

FOLLOW all safety, storage, handling, use, and disposal instructions.

USE the correct product or chemical for the job. If possible, use a nonhazardous product to do the job. Use the minimum amount of product or chemical necessary to do the job.

Common Hazardous Materials Found or Used at Facilities on the ORR

Asbestos may be present in ceiling tiles, transite siding, roofing, flooring, insulation, cable trays, and wire, piping, boiler turbines, and feedwater heater insulation.

Mercury may be present in some electrical switches and gauges, as well as in thermometers and thermostats.

Compressed gas is usually stored in metal cylinders (toxic, ignitable, or reactive). One of the most common types of compressed gases is aerosol cans. Spent aerosol cans should never be thrown into the dumpster or sanitary trash bin; the preferred management is to recycle them.

Reagents may be stored in a chemical laboratory (toxic, reactive, corrosive, or ignitable).

Air conditioning and heating systems, diesel generators, and water treatment processes may contain hazardous liquids. Such systems may contain the following hazardous materials:

- Sulfuric acid
- Ethylene glycol (antifreeze)
- Sodium hydroxide
- Freon
- Natural gas
- Sodium permanganate
- Sodium nitrate
- Citric acid
- Nitric acid (corrosive, oxidizer)
- Diesel fuel
- Gasoline



What can I do to handle hazardous materials properly?

Wear appropriate safety equipment as defined in the *Job Hazard Analysis* for your task.

REMEMBER—You must be medically qualified, trained, and fitted (FIT tested) prior to using a respirator or dust mask.

Make sure your work area is safe for handling hazardous material. Safe conditions are a result of the following:

- Good ventilation
- Clean work space where good housekeeping practices are obvious
- Appropriate temperature; away from direct heat
- Spill response equipment is readily available
- Compliance with fire safety rules

USE contents of previously opened containers prior to opening a new one. Take out of storage only the amount you need to do the job.

When transferring chemicals from bulk containers (drums) to smaller containers (buckets), the smaller container must be compatible with the chemical used and must be properly labeled to identify the chemical.

RETURN unused and uncontaminated chemicals to a designated storage area when the job is completed.

CLOSE/SEAL all chemical containers when they are NOT in use.

DO NOT pour used or excess chemicals down a drain, into a sump or pond, or onto the ground.

Check with your Waste Generator Services or project's waste management staff for proper disposal of waste and containers (e.g., plastic bottles, used spray paint cans).

Pesticides and Their Application

A pesticide is any substance or mixture of substances intended for:

- Preventing, destroying, repelling or mitigating any pest
- Use as a plant regulator, defoliant, or desiccant
- Use as a nitrogen stabilizer

Pesticides are classified as *nonrestricted use* or *restricted use*.

Nonrestricted-use pesticides are generally in ready-to-use form and are approved for use by noncertified applicators.

Restricted-use pesticides are used only when nothing else works to control the pest. Such pesticides can be used only by state-certified applicators. ORR facility personnel may use contractors to apply restricted-use pesticides. Waste generated from using such pesticides may require disposal as hazardous waste.



USE appropriate *personal protective equipment* for the job: safety glasses, respirator, protective clothing, gloves, and boots.

READ and follow all label directions. The label is the law.

Improper application of pesticides can contaminate surface water or groundwater.

REMEMBER—Keep pesticide use and waste to a minimum.

Management of Solid and Hazardous Waste

Waste is managed by storage, treatment, recycling/reuse, or disposal. A material that is ready for disposal is considered a *solid waste*. A solid waste may be a liquid, solid, or gas. Disposal practices must follow federal, state, and local solid waste laws.

Generators of waste at ORR facilities are responsible for determining if the waste is hazardous. If help is needed with this determination, contact UCOR Waste Generator Services or your project's or company's waste management staff.

Hazardous waste is tracked and managed during its storage, treatment, recycling, and disposal, from "cradle to grave" (from its point of generation to disposal). Such waste must be labeled in accordance with EPA and TDEC rules.

To properly dispose of waste, you have to know whether it is hazardous or nonhazardous.

A waste is hazardous if it contains an *EPA-listed hazardous waste* or if it exhibits one or more of any hazardous characteristic(s) (*ignitable, corrosive, reactive, or toxic*).

Hazardous waste or hazardous waste residues from treatment processes must be permanently disposed at an EPA/state-permitted disposal facility.

A nonhazardous/nonradiological waste can be disposed of at a state-permitted landfill. On the ORR, most of this type of waste is disposed of at the Y-12 Sanitary Landfills.

DO NOT MIX HAZARDOUS AND NONHAZARDOUS WASTE. If an *EPA-listed hazardous waste* is purposely or accidentally mixed with nonhazardous waste, the entire waste volume must be disposed as required for the listed waste.

If you are unsure about whether a waste is hazardous, check with UCOR Waste Generator Services or your company's waste management staff.

Characteristics of a Hazardous Waste

- **Ignitable:** Can cause a fire and can easily burst into flames (examples: gasoline, alcohol, paint solvents)
- **Reactive:** Unstable, may produce toxic fumes or be explosive (example: dry chlorine mixed with any organic product)
- **Corrosive:** Can eat into other materials (examples: sulfuric acid, hydrochloric acid, lye)
- **Toxic:** Poisonous (examples: mercury, lead, and pesticides)

Hazardous wastes can be solid, liquid, or gas. Contact UCOR Waste Generator Services or your project's or company's waste management staff with questions if you are uncertain about your waste.



Handle with Care:

- Don't mix hazardous with nonhazardous (example: solvent with used oil).
- Minimize mixed waste generation (example: radioactive and hazardous waste).

- Don't mix or store incompatible wastes together (example: acid with solvents).

Contact UCOR Waste Generator Services or your project's or company's waste management staff with questions.

Areas for the Temporary Storage of Hazardous Waste

Satellite Accumulation Areas (SAAs) and 90-Day Accumulation Areas (90-DAA) are specially designated locations on the ORR that may be used for the temporary accumulation or storage of hazardous waste. These areas must be preregistered with your UCOR project and properly posted before they can be used for waste accumulation or storage.

Contact your UCOR project EC&P Lead or your company's EC&P staff for assistance if you are not sure that an area can be used for managing hazardous waste.

Satellite Accumulation Area

Containers having a total volume of up to 55 gallons of hazardous waste or 1 quart of acutely hazardous waste may be stored in an SAA as long as there is an active process generating the waste and that process is near or next to the SAA.

A waste accumulation container held in an SAA must be located near or next to the process generating the hazardous waste (example: paint shop, garage). A container may stay in this area until it is filled. Once the SAA is filled to its capacity, the container(s) must be moved within 72 hours to a RCRA-permitted storage area or to a 90-DAA.

An SAA should be posted (display a sign) so it is clear that the area is being used to store waste.

After the work is done or the job site is closed, the waste must be disposed and the SAA closed and down-posted.

90-Day Accumulation Area

Hazardous waste in excess of 55 gallons may be temporarily stored for up to 90 days in specifically designated/posted 90-DAA. The 90-DAA should be clearly marked (posted with a sign) and all containers grouped according to the waste's hazard class.



Leave adequate aisle space to move containers, to visually inspect containers for leaks, and to provide access for emergency equipment.

Good recordkeeping is essential. Inspect 90-DAAs every seven days (even during periods of work stoppage and holidays) and have inspection records available.

Temporary storage areas for oil and hazardous waste should have the following:

- A phone (or other communication device) with posted contact names and phone numbers of emergency personnel
- An alarm system
- Fire protection equipment (adequate water supply, fire extinguisher)
- Secondary containment
- Spill control equipment

Weekly inspections of these areas **MUST** be conducted to ensure safe storage of waste and that equipment and workers are prepared to handle spills and emergencies.

How can I manage and store hazardous waste properly?

Do:

- Keep the container lid closed and locked when not being filled.
- Clearly label container as “Hazardous Waste.”
- Clearly indicate what type of waste is in the container.
- Use containers in good condition.
- Leave 2 inches of headspace when filling a drum.
- Date the container and move it to a RCRA-permitted storage area or to a 90-DAA once it is filled.
- Use a container that is compatible with the waste (example: don't put acid in a metal drum if the drum is not lined with a plastic liner).

Do not:

- Use a container with rust, cracks, leaks, bulges, or major dents.
- Overfill the container (put more than 50 gallons in a 55-gallon drum).

Handling of Empty Containers

Separate empty containers (e.g., drums, overpacks, carboys, pressurized cans) that formerly contained hazardous or nonhazardous materials from others with content.

Store *empty drums* upside down, either indoors or outdoors. This helps to keep moisture from accumulating in the empty drum.



A container is determined to be empty if all contents have been removed using commonly employed practices AND:

- It has no more than 1 inch of residue remaining at the bottom of the container; or
- No more than 3% by weight of the container capacity, of residual material remaining in the container (containers of less than or equal to 110 gallons in size); or
- No more than 0.3% by weight of container capacity, of residue remaining in the container (containers of greater than 110 gallons in size).

Any residue released when a container is crushed or punctured must be collected, analyzed, and disposed appropriately.

Before transporting any empty container offsite, remove any facility name markings.

Empty aerosol paint can: Depressurize and crush the can. Such cans are considered scrap metal and are recycled.

Empty pesticide container: Follow the manufacturer's directions for disposal. Many pesticides are considered an *acute hazardous waste*, and the container will require *triple rinsing* prior to disposal.

Asbestos

What is asbestos?

Asbestos is a family of naturally occurring mineral fibers uniquely suited for use in noncombustible, nonconducting, or chemically-resistant materials. It is used in building materials and electrical components because of its thermal and electrical insulation properties.

Where is asbestos found?

Asbestos may be found in cement, plaster, siding, roofing material, floor tiles, mastic adhesives, insulation (e.g., wall, wire, piping, boiler, turbine, feedwater), cable trays, and spray materials (used on ducts, beams, and equipment, etc.)

Asbestos-containing materials are classified as friable material (can be crumbled to powder by hand and, therefore, can be inhaled and are considered hazardous) and non-friable (not easily crumbled but may also need special handling).

Polychlorinated Biphenyls

PCBs are hazardous compounds (usually found in oils) that have been used in dielectric fluid of electrical transformers. *PCBs* are practically insoluble in water, they don't burn except at high temperatures, they don't conduct electricity and they conduct heat very well, which made them popular for electrical use prior to them being banned. *PCBs* may also be found in bushings, capacitors, circuit breakers, metering devices, electrical cable, electromagnets, hydraulic fluids, electric motors, ballasts for light fixtures, some coolant fluids, caulks, carbonless paper, and as an ingredient in paints. *PCBs* were present in certain transformers in ETP process buildings, electrical switchyards and may be present in other structures on the ORR.

What effect can PCB contamination have on my health or the environment?

PCBs are very stable compounds and degrade very slowly in the environment. Some *PCBs* have been shown to cause cancer in animals and may cause cancer in humans. When burned, *PCBs* may be converted to other, highly toxic compounds like dioxins and furans.



How do I know if a piece of equipment contains PCBs?

Equipment at all three facilities on the ORR is labeled according to the levels of PCBs present as determined by laboratory testing.

Labels are used to designate the following groups of PCB-containing items:

- *Non-PCB Equipment:* Less than 50 parts per million PCB.
- *PCB-Contaminated Equipment:* 50–499 parts per million PCB.
- *PCB Equipment:* More than 500 parts per million PCB, which requires label, inspection, and inspection records.

WATCH for spills and leaks under or near electrical equipment.

Any leaks from PCB or PCB-contaminated equipment must be corrected and cleaned up immediately. Notify your supervisor or the PSS (at ETTP or Y-12) and the LSS (at ORNL) or Facility Manager if you discover suspected PCB leaks or spills. Any materials contaminated with PCBs must be properly labeled, stored, and disposed of in an appropriate permitted waste facility. Contact your EC&P Lead for guidance prior to cleaning up any spill or leak.

OTHER TYPES OF WASTE AT ORR FACILITIES

- Low-level waste (LLW)
- Mixed low-level waste (MLLW)
- TSCA PCB (LLW)
- Transuranic (TRU) waste
- Universal waste
- Used oil
- CERCLA waste

Low-Level Waste

What is LLW?

LLW is a broad category of waste. It consists primarily of radioactively contaminated hand tools, components, shoe covers, lab coats, cloths, paper towels, etc. These were items used in areas where radioactive material was present, and they generally carry a small amount of radioactivity. LLW can also include radioactively contaminated soil and equipment.

How is LLW stored?

LLW must be stored in approved containers and be inspected monthly.

How is LLW labeled?

Containers storing LLW must have radiological, nonhazardous waste, and contents information labels.

What happens to LLW?

LLW is transported and disposed at an approved DOE-owned [e.g., Environmental Management Waste Management Facility (EMWMF) on the ORR or the Nevada National Security Site (NNSS)] or Nuclear Regulatory Commission (NRC)-licensed facility.

Mixed Low-Level Waste

What is MLLW?

MLLW is waste that contains both radioactive and hazardous components as defined by the Atomic Energy Act and RCRA.

How is MLLW stored?

MLLW is stored in approved containers within facilities that have a RCRA permit. This permit has a list of criteria that includes weekly inspections, engineering and administrative controls, and training requirements.

How is MLLW labeled?

A RCRA hazardous waste label, radiological label, and contents information label are on all MLLW storage containers.

What happens to MLLW?

MLLW is disposed at an NRC-licensed or DOE facility with a RCRA permit, and the material must meet RCRA LDRs.

TSCA PCB LLW

What is TSCA PCB LLW?

TSCA PCB LLW contains both radiological and PCB components. TSCA regulates the use, storage, and disposal of PCBs.

How is TSCA PCB LLW stored?

It must be stored in approved containers inside a facility that has a secondary containment system and adequate roof and walls and containers must be inspected for leaks at least once every 30 days.

How is it marked?

This type of waste is stored in a container labeled with a PCB M_L 6 in. x 6 in. mark and contents information label.

What happens to TSCA PCB LLW?

It must be disposed of at an NRC-licensed facility or a DOE facility that is permitted to accept TSCA PCB LLW waste.

TRU Waste

What is TRU waste?

TRU waste is radioactive waste that contains man-made elements heavier than uranium and is categorized by its composition as either contact-handled (CH) or remote-handled (RH).

How is TRU waste stored?

TRU waste is stored in approved containers within facilities at ORNL.

How is TRU waste labeled?

A radiological label and contents information label are on all TRU waste containers.

What happens to TRU waste?

TRU waste is disposed at the DOE's Waste Isolation Pilot Plant (WIPP).

Note: TRU mixed waste is managed the same as MLLW except there are weekly and monthly inspection requirements.

Universal Waste

Universal waste is a category of RCRA hazardous waste that EPA created to encourage recycling. Four waste streams common to the three sites on the ORR include:



- Batteries—Typically rechargeable types, such as lead-acid, nickel-cadmium, nickel-metal hydride, and mercury-containing batteries; automotive lead-acid batteries destined for regeneration. Lead-acid batteries can be managed under the spent lead-acid battery reclamation standards if they will be shipped offsite to be reclaimed.
- Used lamps—Fluorescent, high intensity, neon, mercury vapor, high-pressure sodium, incandescent, and metal halide lamps.
- Mercury-containing equipment—A device or part of a device (including thermostats) that contains elemental mercury integral to its function.
- Pesticides—Stocks of recalled or unused pesticide products collected in a pesticide collection program for recycling.

Universal waste may be accumulated for up to 1 year before recycling. The start date must be readily available either on the container or in a logbook.

What can I do?

If you manage universal waste, you should do the following:

- Put accumulation start dates on items or containers, or in a logbook.
- Make sure containers are appropriate for the waste.

- Keep containers closed when not filling them to prevent spills and so as not to collect precipitation.
- Make sure labels are visible on the containers or items.
- Make sure that tapes, fences, signs, etc., designating the collection area are in place and visible.
- Manage all leaks or spills as hazardous waste.

Used Oil

Many products used on the ORR qualify as *used oil*.

Used oils include electrical insulating oil, industrial hydraulic fluid, automotive transmission fluid, refrigeration oil, compressor oil, metal working fluids, and grease.

Collect used oil for recycling only in containers in good condition. Each container used must be clearly labeled or marked with the words "*Used Oil*," even if oil is stored for only 1 day, and must be covered or closed at all times to prevent rainwater from entering. There is no time limit for storing used oil, but containers must be inspected monthly.



What can I do?

- Make sure containers are in good condition (no rust, dents, bulges, or leaks).
- Make sure containers are marked "Used Oil."
- Keep containers closed except when adding used oil.
- Clean up spills immediately.
- DO NOT put other liquid wastes in used oil containers.

- Inspect containers monthly.

Before releasing a used oil container for transport, contact your supervisor to be sure that all transportation identification numbers and permits held by the receiving transporter are valid.

CERCLA Waste

CERCLA waste is generated during the implementation of environmental cleanup or remediation conducted pursuant to CERCLA. CERCLA waste is also classified as one or more of the waste types identified above (e.g., hazardous, PCB, asbestos, universal, used oil) and projects must comply with all ARARs identified in the applicable CERCLA decision document. Administrative requirements such as permitting and waste storage time requirements (e.g., 90 days) are generally not applicable to CERCLA waste.

WETLANDS ON THE ETPP

Wetlands are common on the ETPP. They serve many valuable environmental functions, and are protected by state and federal laws and regulations, and by DOE Orders. Wetlands are commonly characterized by standing water during a significant part of the year and may also have vegetation such as cattails.



What can I do?

- Locations of known wetland areas are mapped. The NEPA review required before the initiation of projects will include reviews of these maps to determine if wetlands will be impacted.
- If you suspect that a wetland has not been included in these maps, please contact your EC&P Lead to arrange for an investigation by qualified personnel.
- If a wetland area will be impacted by any earth-disturbing activities, additional protections will likely be required. Contact your project EC&P Lead for assistance.

WILDLIFE ON THE OAK RIDGE RESERVATION

Wildlife, including both plants and animals, is abundant on the ETTP. Much of the ORR is included in the Oak Ridge Wildlife Management Area. Many species on the ORR are protected by state and federal laws and regulations, and by international agreements. The resulting regulatory framework can be quite confusing. Surveys have been made to establish the presence or absence of protected species on the ETTP, but due to the nature both of wildlife and the operations at ETTP, these surveys must be performed periodically to ensure that protected species have not moved back into areas once thought clear.



In addition, nuisance species sometimes move into facilities (including buildings) where they could potentially interfere with operations or pose a danger to employees. Bats often roost in abandoned buildings and even under the bark of certain species of trees. Raccoons and opossums frequently raid dumpsters and even sometimes enter buildings, in search of food. Although uncommon, venomous snakes are present on the ETTP. Ospreys, bald eagles, and migratory birds such as Canadian geese nest on the ETTP. All of these are protected species.

If necessary, wildlife can be relocated by Tennessee Wildlife Resource Agency (TWRA) personnel. Employees should never relocate, harass, or interfere with wildlife of any kind.

What can I do?

- Before conducting any activities that will disturb the environment (including earth-disturbing activities and removing vegetation in areas outside of the property protection fences) or demolishing buildings, be sure that wildlife will not be impacted. If wildlife may be impacted by work, contact your project EC&P Lead for assistance.

- Do not feed wildlife (including feral cats and dogs).
- Keep dumpsters and other waste containers closed.
- If nuisance wildlife is interfering with operations or has entered into a building, please contact your project EC&P Lead to arrange for TWRA personnel to remove the wildlife.

ENVIRONMENTAL PAGERS

The UCOR EC&P Program periodically issues *Environmental Pagers*, or fact sheets, to provide you with useful information about a variety of concerns and questions related to the environment and to the protection of natural resources. These *Pagers* can be found on the UCOR EMS website.

The *Environmental Pagers* in this collection are produced by a team of ESH EC&P experts. Each *Pager* concisely addresses key compliance information of interest to all workers in the office and in the field and helps us put important EC&P information to use wherever we are. Some of the *Pager* topics on the UCOR website include:

- Common RCRA violations
- How can you control and respond to spills and leaks?
- The National Historic Preservation Act
- RCRA universal waste
- Aerosol can recycling
- RCRA SAA
- EMS
- RCRA 90-DAA
- NEPA
- SPCC
- Used oil
- What should you know about red fire ants?
- Bats on the ORR

If you have an idea for an *Environmental Pager* or questions about past *Pagers*, speak to your project's EC&P Lead or your company's environmental staff.

ENVIRONMENTAL AWARENESS OFF THE JOB

UCOR is equally concerned with protecting the environment off the job site. Please use the information about the environment that you have learned while working in our facilities when you are away from work, and share it with your family and friends.



SAFETY AND HEALTH QUESTIONS

UCOR has also issued a *Safety and Health Handbook, Oak Ridge, Tennessee* (UCOR-4087) to help answer questions you may have about your safety and the safety of others that you work with on the jobsite. Please refer to the *Safety and Health Handbook*. If you have more questions, discuss them with your supervisor or your project ESH Operations Manager.



CONCLUSION

Thanks for taking the time to read this Handbook!

USE it as a reference on the jobsite or in the office as you do work.

Although environmental laws, regulations, orders, and standards may vary depending on a project's scope of work or the location of the work activity, UCOR takes upon itself the responsibility to remain fully compliant with all applicable federal, state, local, and DOE requirements so that the environment is protected and expects each of us to do the same!

Keep in mind that although this Handbook is designed to recommend compliant and environmentally protective practices and to guide you in developing good work habits and a general awareness about the environment, it alone cannot guarantee that your work activity will meet all laws, regulations, orders, and local requirements.

CONTACT your supervisor, project ESH EC&P Lead and/or project ESH Operations Manager, or your company's environmental staff if you have any questions.



REMEMBER that it is our collective responsibility to do work in a manner that is protective of the environment and its natural resources. The safety, health, and well-being of every worker and the public at large, as well as our environment, are the most important assets we are entrusted to protect.

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DETACH HERE ←

***Environmental Compliance & Protection
Awareness Handbook***

Please complete and return to your supervisor prior to starting work.

Company _____

Date _____

I acknowledge my responsibility to have read and reviewed the contents of this handbook.

I agree to follow the practices outlined in this handbook while working on this project.

(Print) Last Name First Name Initial

Signed _____

Badge # _____

Notes

Notes

Notes

Notes

EMERGENCY SIGNALS

Standard Alerting Tone on Radios:

Signal: High/Low wavering tone
Action: Standby for information from the Park Shift Superintendent (PSS)

Criticality Accident Alarm:

Signal: Continuous, steady tone
Action: Exit the area as quickly as possible and go to the nearest Assembly Station

Instructions for Emergency Reporting:

Use the fire alarm box to summon help for any emergency. Emergency response personnel will respond to the **location** of the fire alarm box, so if it is safe, stand by the alarm box and provide information to the emergency response people when they arrive.

Use the phone numbers below to report on-site emergencies at each location:

Location	1st	2nd (land or cell)
ETTP	911 (land or cell)	PSS 574-3282
ORNL	911 (land only)	LSS 574-6606
Y-12	911 (land only)	PSS 574-7172

At ORNL and Y-12 cell calls to 911 will slow response since the call will have to be re-routed from city/county service to PSS/LSS response.

Note:

Individuals not normally scheduled to work on-site between 6:00 pm and 6:00 am on weekdays or anytime on weekends or holidays must notify the PSS upon arrival and departure.

Information:

For information on road closures, inclement weather, or schedule changes, **do not** call the PSS. Call

ETTP: 241-INFO (241-4636)
Y-12: 241-1212
ORNL: 574-9836

